C-reactive protein velocity predicts microvascular pathology after acute ST-elevation myocardial infarction



Holzknecht M¹, Tiller C¹, Reindl M¹, Lechner I¹, Troger F², Michael Hosp¹, Mayr A², Brenner C¹, Klug G¹,

Bauer A¹, Metzler B¹, Reinstadler SJ¹

¹ University Clinic of Internal Medicine III, Cardiology and Angiology, Medical University of Innsbruck, Austria

² University Clinic of Radiology, Medical University of Innsbruck, Austria

Background

The role of C-reactive protein velocity After adjustment for cardiac troponin T (CRPv) as an early and sensitive marker of (cTnT), culprit lesion location and TIMI-flow an excessive inflammatory response in the post-PCI, CRPv (odds ratio 3.36, 95%) setting of acute ST-elevation myocardial confidence infarction (STEMI) is only understood. The aim of this study was to with the occurrence of MVO. CRPv (area investigate, in patients with STEMI treated under the curve [AUC] 0.76, 95% CI 0.71primary with intervention (PCI), the association of CRPv MVO compared to 24h CRP (AUC with microvascular infarct pathology.

Methods

This prospective cohort study included a total of 316 patients with STEMI undergoing PCI. CRPv was defined as the difference between CRP 24±8h and CRP at hospital admission, divided by the time (in h) that have passed during the two examinations. The association of biomarker levels with magnetic (CMR)cardiac resonance determined microvascular obstruction (MVO) was evaluated. CMR was performed | ^{Cu} at a median of 3[interquartile range 2-4]days after PCI.

Conclusion

Results

interval (CI) 1.72-6.57; poorly p<0.001) remained significantly associated percutaneous coronary 0.81; p<0.001) was a better predictor for difference: 0.03, p=0.002). The addition of CRPv to peak cTnT resulted in a higher AUC for MVO prediction than peak cTnT alone (AUC 0.86, 95% CI 0.82-0.90; p<0.001 vs. AUC 0.84, 95% CI 0.79-0.88;

p<0.001. AU					
	Univariable		Multivariable		
	OR (95%CI)	p-value	OR (95%CI)	p-value	MACE (%)
CRPv	9.12(4.31-19.32)	<0.001	3.36(1.72-6.57)	<0.001	
Peak cTnT	1.00(1.00-1.00)	<0.001	1.00(1.00-1.00)	<0.001	
Culprit lesion	1.57(1.15-2.16)	0.005	1.25(0.87-1.80)	0.226	Number at risk
TIMI flow post-pPCI	0.35(0.17-0.73)	0.005	0.52(0.23-1.18)	0.119	— CRPv <0.42 mg/l/r — CRPv ≥0.42 mg/l/r
Table 1: Bina					

prediction of MVO.

In patients with STEMI treated with primary PCI, CRPv was associated with microvascular infarct pathology with a predictive value incremental to cTnT, suggesting CRPv as an early and sensitive biomarker for more severe infarct pathology and outcome.





Figure 1: ROC analysis for the prediction of MVO.



	Total population	No MVO	MVO	p-value
	(n=316)	(n=142, 45%)	(n=174, 55%)	
ge, years	57[51-66]	57[51-65]	57[51-66]	0.911
emale, n (%)	58(18)	30(21)	28(16)	0.250
ody mass index, kg/m²	26.1[24.6-28.7]	26.2[24.4-28.7]	26.0[24.6-29.1]	0.992
urrent smoker, n (%)	181(57)	88(62)	93(53)	0.128
yperlipidemia, n (%)	174(55)	79(56)	95(55)	0.854
iabetes mellitus, n (%)	31(10)	12(9)	19(11)	0.463
amily history, n (%)	120(38)	55(39)	65(37)	0.517
ypertension, n (%)	142(45)	57(40)	85(49)	0.122
ystolic blood pressure, mmHg	137[115-154]	140[118-159]	132[114-150]	0.054
iastolic blood pressure, mmHg	82[73-96]	82[73-97]	82[72-95]	0.629
eart rate, bpm	72[63-85]	71[63-84]	74[63-86]	0.397
otal ischemia time, min	176[120-259]	171[122-258]	183[120-262]	0.687
ulprit lesion, n (%)				<0.001
RCA	127(40)	76(54)	51(29)	
LAD	144(46)	47(33)	97(56)	
LCX	42(13)	17(12)	25(14)	
RI	3(1)	2(1)	1(1)	
umber of affected vessels, n (%)				0.768
1	192(61)	86(61)	106(61)	
2	89(28)	42(30)	47(27)	
3	35(11)	14(10)	21(12)	
IMI flow post-PCI, n (%)				0.017
0	2(1)	0(0)	2(1)	
1	5(1)	1(1)	4(2)	
2	28(9)	6(4)	22(13)	
3	281(89)	135(95)	146(84)	
RP, mg/l				
Admission	2.2[1.0-4.3]	2.1[1.1-3.9]	2.3[1.0-4.5]	0.803
24h	13.0[8.0-21.0]	10.0[6.3-14.7]	18.2[9.6-30.4]	<0.001
Peak	22.6[13.1-45.6]	15.8[9.4-22.7]	38.4[19.9-66.6]	<0.001
dmission to peak CRP, h	47[36-60]	43[29-55]	48[42-62]	0.001
RPv (admission to 24h)	0.42[0.24-0.83]	0.30[0.15-0.46]	0.67[0.34-1.14]	<0.001
TnT, ng/l				
Admission	113[27-699]	64[20-223]	206[35-1925]	<0.001
24h	3231[1541-5453]	1633[690-3076]	4774[3172-6804]	<0.001
Peak	4815[2359-8539]	2493[1133-4498]	6672[4661-11345]	<0.001
dmission to peak cTnT, h	11[7-16]	13[8-18]	9[6-13]	<0.001
Tab	le 2: Baseline d	characteristics	S.	

Disclosures: none.